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USSR: Extending Lead in Heavy-Lift Aircraft

An Intelligence Assessment

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SW 90-10041X
July 1990

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USSR: Extending Lead in Heavy-Lift Aircraft

An Intelligence Assessment

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USSR: Extending Lead in Heavy-Lift Aircraft

Key Judgments

Information available as of 1 June 1990 was used in this report.

Recent developments indicate that the Soviets are extending their lead over the United States in heavy-lift aircraft capability and probably will continue to do so for the foreseeable future. Several events highlight the Soviets' intent to develop and produce both heavy-lift transports and heavy-lift helicopters. In November 1988 the Soviets unveiled the world's largest and heaviest transport aircraft, the An-225, given the NATO designation Cossack (see figure 1). In addition, [redacted] the Soviets are developing a new ultra-heavy-lift helicopter (UHLH) that will further extend their lead over the United States in heavy-lift helicopter load capacity (see figure 2). The Soviets are aggressively seeking commercial markets for the An-225, and we also expect similar efforts for the UHLH.

The An-225 probably will be the largest transport aircraft the Soviets will ever build. An aircraft much larger than the An-225 would exceed the weight and size limits of most of today's airfields and would be very difficult and expensive to build, maintain, and operate.

The An-225 is designed primarily to carry outsized payloads atop its fuselage, including the Soviet space shuttle, components of the Energiya heavy-lift booster, and very large oil drilling and construction equipment. The An-225 is based on the An-124 Condor design and uses many common components. We believe, therefore, that the An-225 will not have any significant technology advances over the An-124. Flight-testing of the An-225 commenced in December 1988. One An-225 has been built and a second is under construction. We assess that the Soviets will build five to 10 An-225s. We believe the first An-225 will be in full operational service by the end of 1990.

Soviet disclosures suggest the An-225 will not replace or significantly supplement the An-124 in the heavy airlift role. The An-225 has a payload capacity of 250 metric tons—1.7 times the capacity of the USSR's An-124 Condor and more than twice that of the US C-5B Galaxy. The An-225 could be used to transport outsized military equipment, but the small number of aircraft the Soviets plan to produce will limit its utility for transporting significant numbers of time-critical military payloads. It is our judgment that the An-225, like the An-124, will not be used in a tactical role. We believe the Soviets will explore the possibility of using the An-225 as a launch platform for spacecraft.

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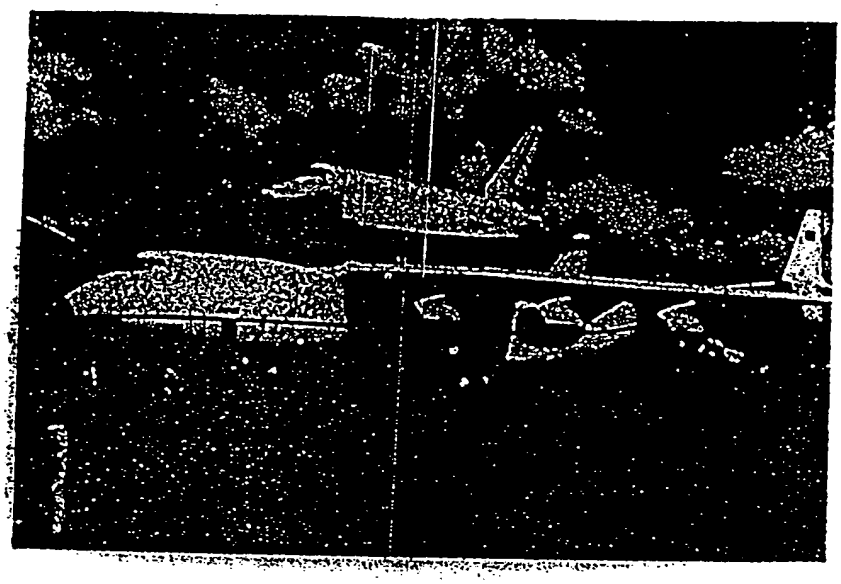
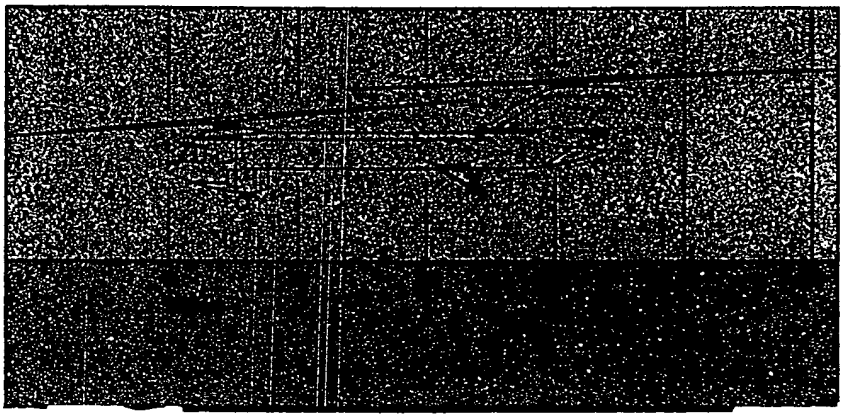
Figure 1. Soviet An-225 Cossack transport



Because of poor transportation to remote areas of the USSR, the Soviet requirement for heavy-lift helicopters is much greater than that of Western countries. [redacted] the Soviets are developing a UHLH capable of transporting a suspended payload of more than 40 metric tons—twice the capability of the Soviets' world-record-setting Mi-26 Halo and two and a half times the capability of the US CH-53E Super Stallion. We believe the new UHLH will be configured in a tandem-rotor configuration like the US CH-47 Chinook and will use existing Mi-26 components

We believe the Soviets will undertake a full-scale flight test of the UHLH helicopter by the mid-1990s. The UHLH is within the Soviets' technical capability, and, based on their vast experience in heavy-lift systems, limited production could begin by the late 1990s. [redacted] We expect that the Soviets will export several of these helicopters commercially or lease them, as they have done with the Mi-26 Halo

Figure 2
Artist's Impression of Soviet Ultra-Heavy-Lift Helicopter



The UHLH could reduce the Soviets' dependence on rail and roadway networks for cargo beyond the Mi-26's capability. Reportedly, one requirement for the UHLH was to support the construction of Siberian power plants and reactors. It also could be used to transport large missiles or missile components to remote areas within the USSR. For military purposes, the UHLH could ferry all surface combat vehicles, including tanks. However, its size and speed make it vulnerable to attack while airborne. We believe that the military role of the UHLH outside the USSR will be limited

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Contents

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Scope Note

The USSR has a long history of developing first-rate heavy-lift aircraft. This paper reviews our assessment of the capabilities and mission requirements for new Soviet heavy-lift aircraft—transports and helicopters—and makes a comparison with current Western capabilities [ ] In addition, the paper projects the probable future direction of Soviet research and development for heavy-lift aircraft. This paper does not, however, address the US and Soviet capabilities when employing heavy-lift aircraft in a fleet scenario

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USSR: Extending Lead in Heavy-Lift Aircraft

Introduction

Recent developments indicate that the Soviets are extending their lead over the United States in the capability to develop heavy-lift aircraft. The Soviets have recently unveiled their newest heavy-lift transport and have discussed the development of an ultra-heavy-lift helicopter (UHLH). (We define a UHLH as a helicopter having a lifting capacity exceeding 30 metric tons.) The continuing development of such aircraft will greatly enhance the Soviets' capability to lift/transport outsized cargo [1] for both military and civil applications. The Soviets have a substantial requirement for heavy-lift aircraft because of the country's terrain and poor ground transportation to remote areas.

Soviet Heavy-Lift Transports

An-225 Cossack

The An-225 Cossack, unveiled on Moscow television in November 1988, has a payload-carrying capability unmatched by any other aircraft in the world. The An-225 has a maximum payload capacity of 250 metric tons and a maximum takeoff weight of 600 metric tons. The An-225 is designed to carry outsized payloads atop its fuselage, including the Soviet space shuttle, components of the Energiya heavy-lift booster, and very large oil drilling and construction equipment. To facilitate the carriage of external payloads, the An-225 features numerous payload attachment points along the top of the fuselage, and an H-tail configuration.

The An-225 made its first Western appearance at the 1989 Paris Air Show and demonstrated an aspect of its design mission by flying to Paris with the Soviet space shuttle "Buran" mounted on its upper fuselage (see figure 1)

During the air show, the Soviets provided information on the development and production schedule of the An-225. The Soviets have stated that the development of the An-225 began in 1985 and that its first flight was in December 1988. They further stated that only one An-225 has been built and a second is under construction. The Soviets plan to place the first aircraft into operational service by the end of 1990. This initial operational capability (IOC) date agrees with our analysis

Configuration. The design of the An-225, as stated by the Soviet designers, is based on that of the An-124 Condor (the world's heaviest operational transport) and incorporates many of the same components (see figures 1 and 3). Because of this we believe that nearly all of the An-225's subsystems are common with those of the An-124.

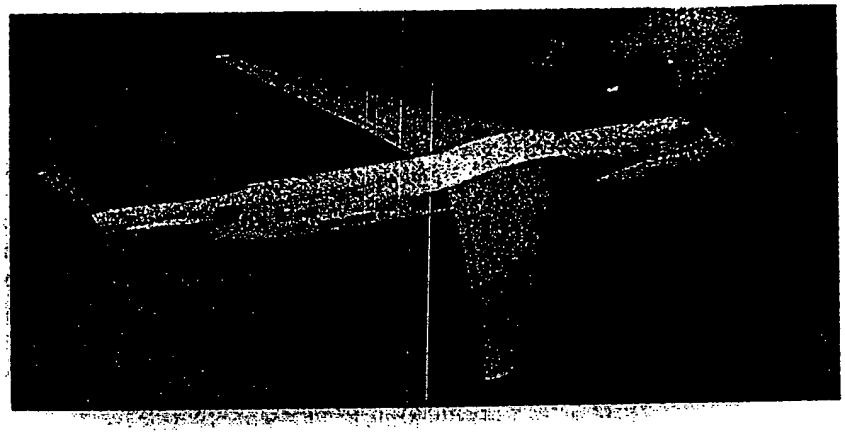
Major similarities between the An-225 and the An-124 Condor include:

- Use of the Condor fuselage with fuselage plugs [2] fore and aft of the wing.
- Attachment of Condor wings to the new center wing section.
- Upward tilting visor-type nose cargo door.
- Landing gear configuration with castered struts; that is, wheels swivel in the direction of the aircraft's ground turn.
- Landing gear "kneeling" capability, which decreases the angle of the loading ramps, facilitating the loading and unloading of long or bulky payloads.
- D-18T high-bypass turbofan engines
- Cockpit layout and instrumentation

[1] Outsized cargo refers to very heavy and/or bulky payloads for example, tanks, trucks, aircraft components, and such

[2] Fuselage plugs are short sections of fuselage inserted between existing An-124 fuselage sections

Figure 3. Soviet An-124 Condor transport



Major differences also exist between the An-225 and An-124. Some are the result of the increase in size, such as:

- Increased wingspan and fuselage length.
- Two additional engines.
- Four additional main landing gear struts.

Other differences are attributable to the mission of the An-225. These include:

- H-tail design.
- No rear cargo door.
- External payload attachment points atop the fuselage.

[redacted] the An-225 is intended for nonmilitary uses within the Soviet landmass. [redacted] Unlike the An-124, the An-225 has a continuous upper deck extending from the cockpit to the aft section of the fuselage. The two additional engines are attached to the new center wing section, while the other four engines are at the same location on the Condor wing section as found on the An-124

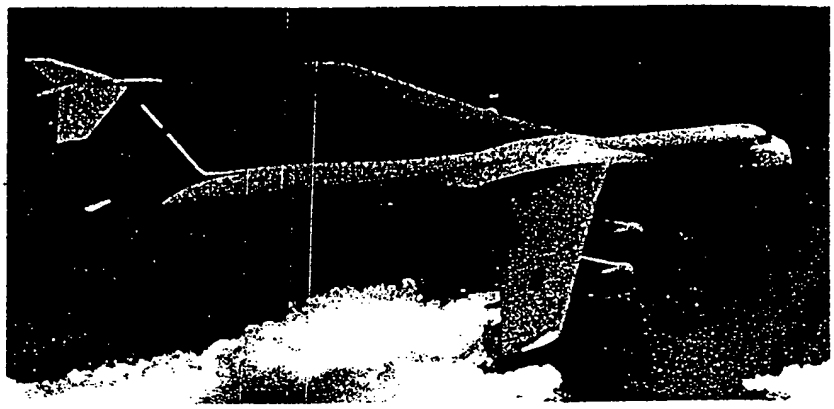
Applications. The Antonov Design Bureau is eager to carry commercial payloads on the An-225 and An-124 and has created a separate organization specializing in the transportation of commercial outsized payloads. The Soviets have offered the unique payload-carrying capability of the An-225 to international customers and have initiated discussions with several [redacted] companies [redacted] concerning the transport of heavy and/or bulky payloads by the An-225 and An-124. Soviet statements at the Paris Air Show indicate that the An-225 will be leased to the European Space Agency to carry space rockets in the near future. The Soviets probably will continue to aggressively seek markets for the An-225 and An-124.

In the future, the An-225 also may be used as an airborne launch platform for spacecraft. [redacted] a spacecraft weighing up to the An-225 maximum payload weight could be launched at an altitude at one-third to one-fourth the cost of a conventional booster launch. [redacted] they were working on a "little shuttle"—probably the Soviet space plane to be launched from the top of the An-225

Other Soviet Heavy-Lift Transports

The An-124 Condor represents Soviet advances in payload-carrying capability and aircraft technology. Development of the Condor began in the late 1960s or early 1970s; it became operational in 1987. It has a

Figure 4. US C-5B Galaxy.



maximum payload capacity of 150 metric tons and a maximum takeoff gross weight of 405 metric tons. The An-124 is able to carry nearly all types of vehicles and equipment used by the Soviet Ground Forces, as well as other outsized cargo, which can be loaded through the visor-type nose cargo door (the first Soviet aircraft so equipped) or the rear cargo door. The aircraft is powered by four large high-bypass-ratio turbofan engines, the D-18T, a first for Soviet aircraft. The Condor has a rudimentary analog fly-by-wire flight control system [1] with a mechanical backup for reliability. The Soviets have produced at least 20 Condors, and a total production run of about 100 aircraft is expected

We believe the Condor would be used primarily in a strategic (vice tactical) role. Design details of the An-124, such as the rear cargo door/ramp, indicate that the An-124 was not designed to airdrop heavy equipment and vehicles. The aircraft currently supplements and probably will eventually replace the An-22 Cock in the heavy-lift transport role.

The An-22 Cock was the only heavy-lift transport in the Soviet inventory before the introduction of the An-124 Condor. It was the world's largest transport aircraft when it entered service in 1967, one year before the US C-5. The An-22 has a maximum payload capacity of 80 metric tons and a maximum takeoff gross weight of 250 metric tons. The An-22 is powered by four turboprop engines with contrarotating propellers. Like the Condor, the Cock is able to carry most of the vehicles and equipment used by the Soviet Ground Forces, but it can be loaded only through the tail. Development of the Cock began in the late 1950s and, when production ceased in 1974, a total of 60 had been produced.

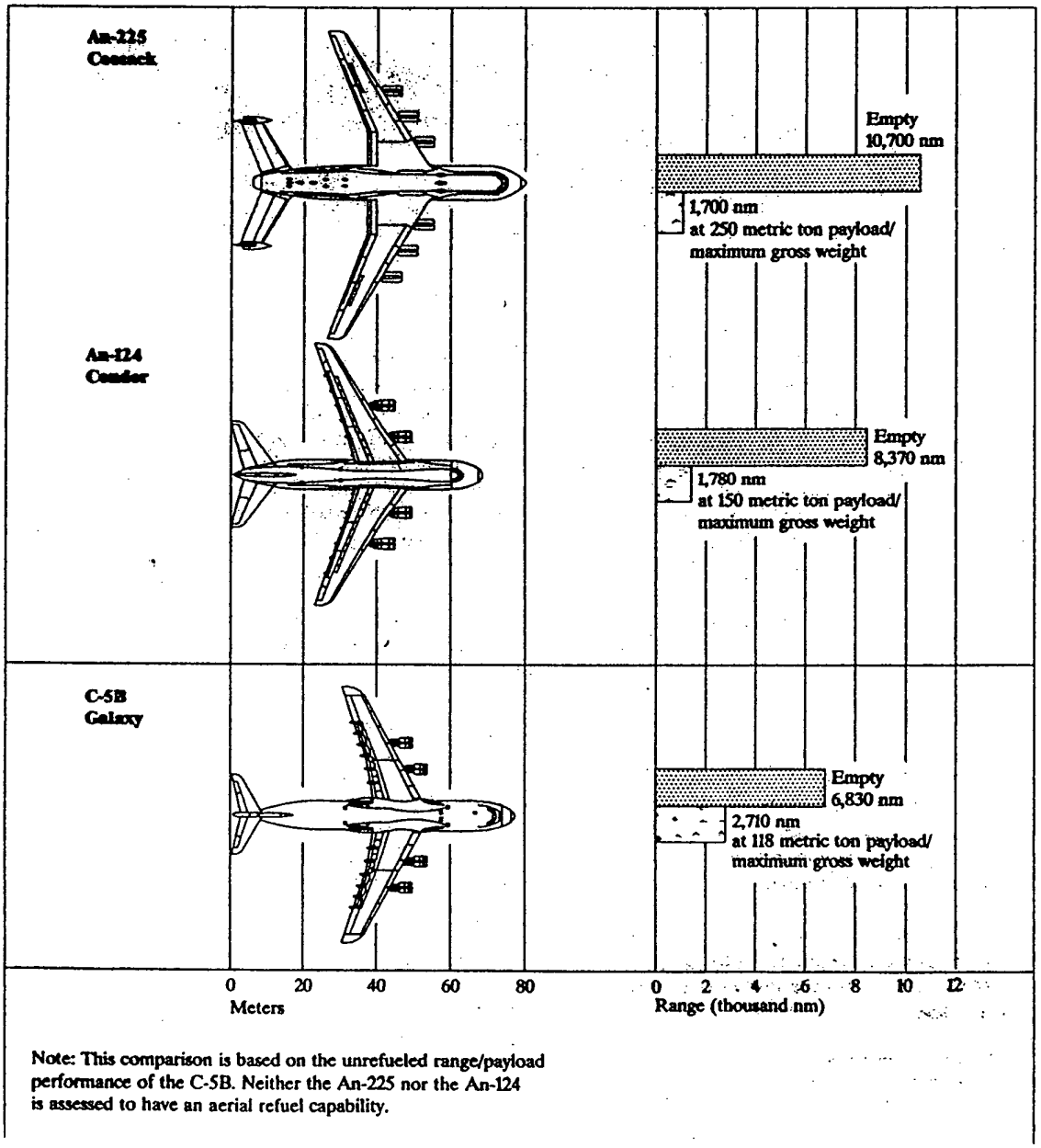
Comparison of Soviet and Western Transports

The An-225's payload capability and estimated ferry range is immensely superior to the largest transport aircraft in the West, the Lockheed C-5B Galaxy (see figure 4), in service with the US Air Force since 1968. The An-225 has a payload capacity [redacted] 100 metric tons greater than the An-124. The An-225 has comparable range/payload performance (estimated) to the C-5B for intermediate payloads, but has a much longer range with light and heavy payloads. This range/payload comparison is shown in figure 5. The An-225 has an impressive capability to transport vehicles of the Soviet Ground Forces, as illustrated in figure 6

Excluding the considerable difference in size and tail configuration, the An-225 and C-5B have several similarities. These include a similar wing design,

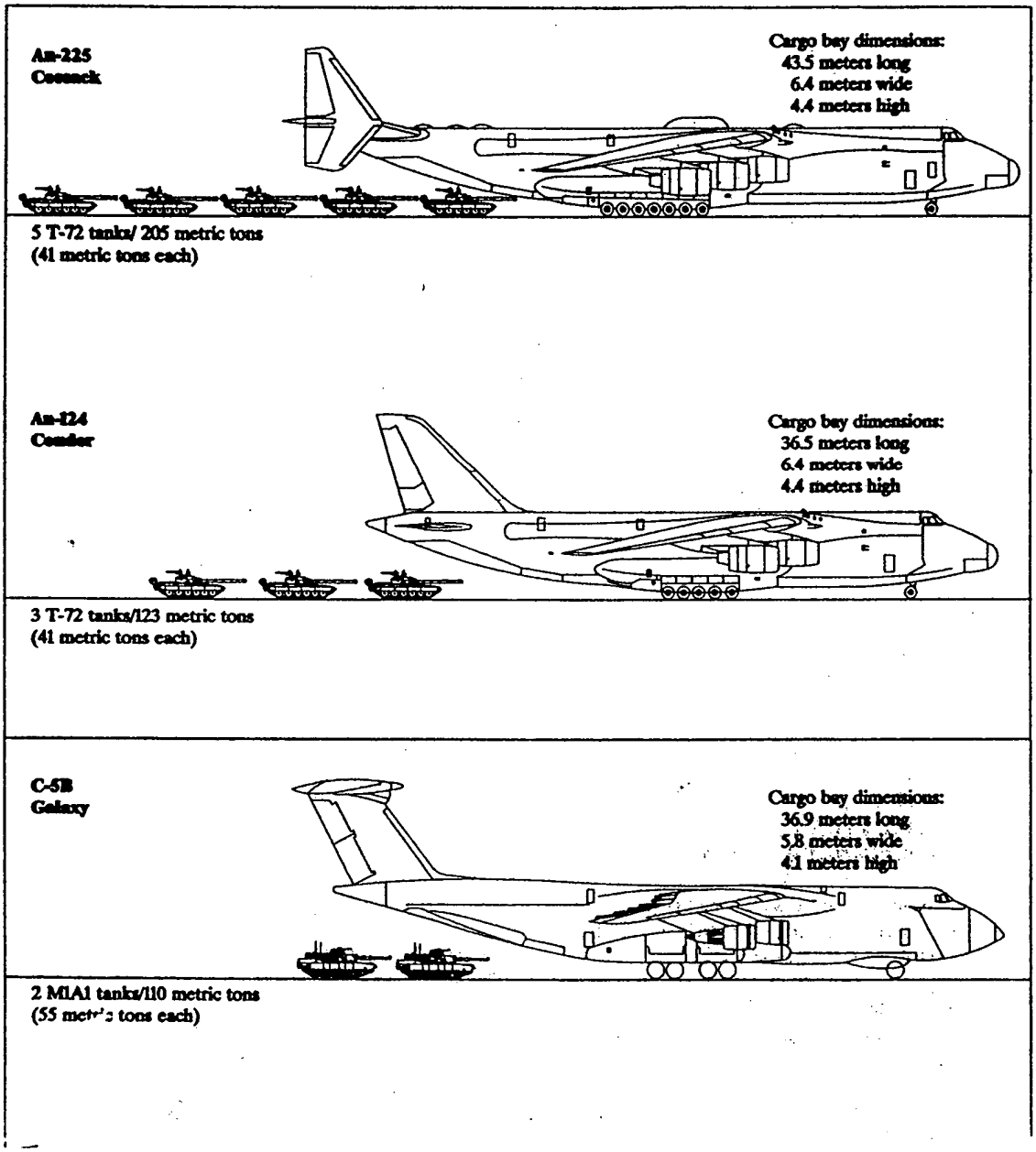
[1] In a fly-by-wire flight system, a computer actuates aerodynamic control surfaces according to pilot input. The computer uses onboard aircraft data from sensors and programmed control laws to maneuver the aircraft efficiently.

Figure 5
Range/Payload Comparison of the An-225, An-124, and C-5B



Note: This comparison is based on the unrefueled range/payload performance of the C-5B. Neither the An-225 nor the An-124 is assessed to have an aerial refuel capability.

Figure 6
Internal Payload Comparison (With Tanks as Cargo)
of the An-225, An-124, and C-5B



high-bypass-ratio turbofan engines mounted on pylons under the wings, a two-deck fuselage arrangement, a visor-type nose cargo door, comparable cargo bay cross section, and a landing gear kneeling capability. One major design difference, however, is that, while the An-225 lacks a rear cargo door, the C-5 has a rear cargo door that is designed to be opened in flight with the capability to airdrop cargo and paratroopers.

Although the capabilities of the An-225 for military airlift are impressive, the Cossack probably will not be used for this role. We believe the Condor will fulfill the Soviet military airlift needs, replacing the An-22 by the mid-1990s

Soviet Heavy-Lift Helicopters

New Ultra-Heavy-Lift Helicopter

Evidence for Development. In recent years we have noted several indications that the Soviets were developing a UHLH that could carry more than 40 metric tons suspended on a sling [

] The Mil Design Bureau is the primary developer of Soviet heavy-lift helicopters

In addition to the open discussions by the Soviet designers, there have been other indications that the Soviets are developing a new UHLH:

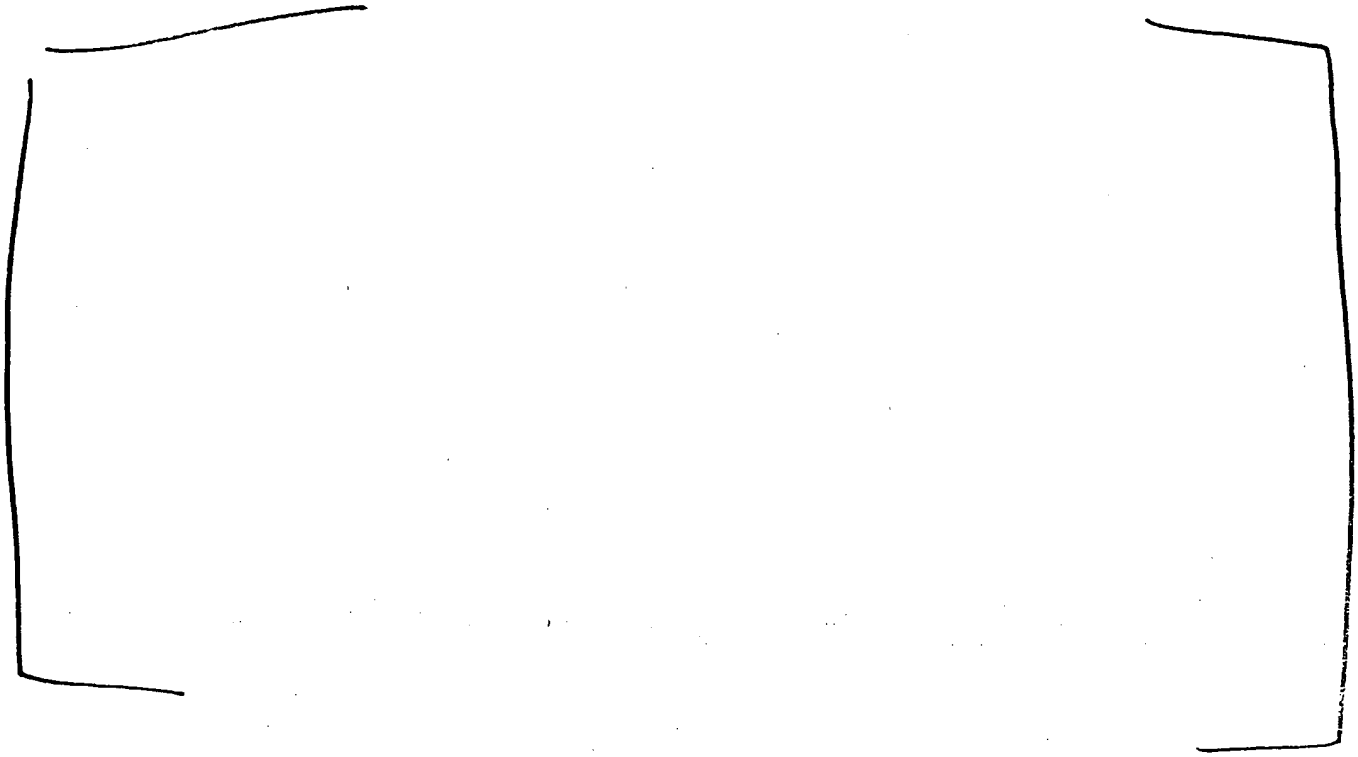
- The first evidence that the Soviets had a requirement for a UHLH became available in 1982. At a Western air show, the Soviet Deputy Minister of Aviation made statements about ongoing UHLH research at the Soviet Central Aerohydrodynamics Institute (TsAGI).
- An open press report from 1985 referred to a Soviet helicopter undergoing tests that would be capable of transporting loads of 40 metric tons on an external sling.
- [ ] the Mil Design Bureau was tasked to develop a twin-rotor helicopter based on the Mi-26 Halo rotor system with a payload capability of over 50 metric tons and probably employing a tandem-rotor configuration like that of the US CH-47 Chinook.
- [ ] the Mil Design Bureau was designing a helicopter larger than the Mi-26 Halo. This UHLH will have a lifting capacity of at least 60 to 80 metric tons

The lifting capacities mentioned in the reporting vary between 40 and 80 metric tons. This variation is most likely due to the context in which it is referenced. The same helicopter that could transport a 40-metric-ton load over 200 nautical miles (nm) might have a zero-range payload [1] between 60 to 80 metric tons. (For marketing purposes the Soviets generally promote their helicopters listing the design mission payload capability, which we believe is 40 to 50 metric tons for the UHLH.

The reporting on the UHLH also indicated various stages of development and differing production time frames. The Soviets probably have mockups and wind tunnel test models for several UHLH designs [

].

[1] Zero-range payload is the weight of payload that a helicopter can pick up vertically without transporting it over a distance. This weight is typically significantly greater than the design maximum mission payload over a given distance.



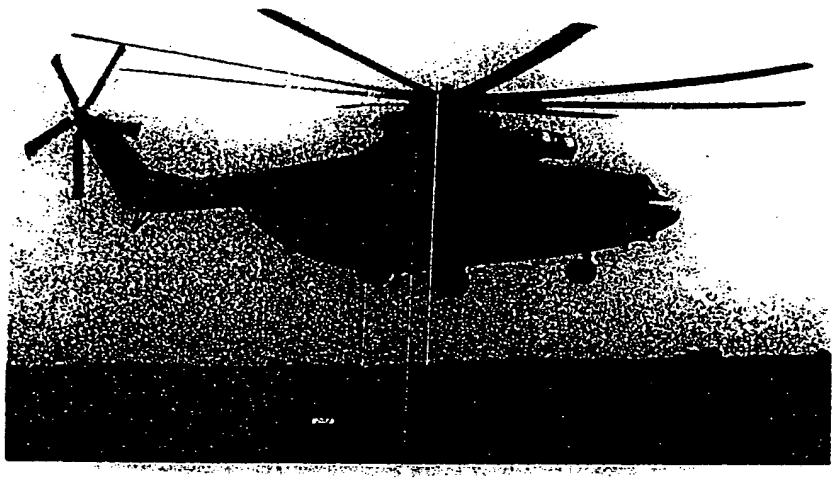
Configuration. The UHLH configuration, [ ], probably will employ a tandem-rotor system (one fore and one aft) based on existing systems from the Mi-26 (see figure 2). This hybrid concept is not new for the Soviets. Their only tandem-rotor helicopter design, the Yak-24 (developed in 1955), used the main rotor, main gearbox, and engines from the Mi-4 Hound. Although the Yak-24 was only marginally successful and was produced only in limited numbers, the Soviets continued to research tandem-rotor theory and have published results in textbooks and technical journals. Recent advances in flight control systems, such as fly-by-wire, as well as composite technology, has probably led to a renewed interest in developing tandem-rotor helicopters[ ] the tandem-rotor configuration has many advocates within the Mil Design Bureau

[ ] the design payload of the UHLH would require a minimum rotor diameter of 50 meters, which is less practical than an equivalent capability of two 27-meter-diameter tandem rotors. Even though the technology is available, the Soviets lack a rotor test cage required for testing a 50-meter-diameter rotor. Historically, they have not produced a new rotor system without prior cage testing

The Soviets in the past also tried to use a wing-mounted side-by-side rotor arrangement on the Mi-12 Homer, [ ] because it provided the opportunity to build a twin-rotor helicopter quickly. However, problems in the development program led to the program's demise. One of these problems that the Soviets are not likely to overcome easily is proprotor-whirl-flutter, an aeroelastic[1] phenomenon between the wing and rotor systems (coupling of rotor and wing vibration modes leading to a forced resonance). For these reasons, we believe that the Soviet UHLH configuration will ultimately utilize tandem rotors.

[1] Aeroelasticity is the combination of aerodynamics and structural dynamics. It represents the complete integrated aerodynamic behavior of a moving body

Figure 8. Soviet heavy-lift helicopter Mi-26 Halo.



Potential Applications Within the USSR. The new Soviet UHLH probably will have the capability to carry either cargo or troops internally, but primarily will be used as a sky crane. Because of terrain and poor transportation to remote areas of the USSR, the Soviets have a substantial requirement for heavy-lift helicopters. The UHLH could reduce the Soviets' dependence on rail and roadway networks for cargo beyond the Mi-26's capability.

[redacted] the Soviet army is very interested in a helicopter that can carry more than 40 metric tons because it could be used to ferry all surface combat machines, including tanks, thus greatly improving ground maneuverability. Several helicopters could quickly transfer army units with artillery, armored troop carriers, and tanks over a frontline, rivers, or mountains. However, because only a few UHLH are expected to be built and because of their vulnerability to attack, their effectiveness in such a mission would be limited. More likely, UHLH would be used in transportation of large missiles or missile components to remote areas within the USSR.

[redacted] one reason for the UHLH requirement was the construction of Siberian power plants and reactor systems. The harsh environment had produced serious difficulties in the reassembly of very heavy pieces of sophisticated equipment that had been disassembled for shipment. These requirements were well beyond the 20-metric-ton mission payload capacity of the Mi-26 Halo heavy-lift helicopter.

Other Soviet Heavy-Lift Helicopters

The Soviets currently have the world's most powerful production heavy-lift helicopter—the Mil-designed Mi-26 Halo that entered production in 1981 (see figure 8). The Mi-26 has a design mission payload capacity of 20 metric tons, internally or sling mounted, and can transport more than 100 troops. For zero-range capacity, the Mi-26 can vertically lift, on a sling, weights approaching 30 metric tons (see figure 9). Although the Mi-26 made a world-record-setting flight, lifting 25 metric tons to 4,100 meters altitude, it is rarely used operationally above the design 20-metric-ton payload [redacted].

The Mi-26 is equipped with a 32-meter diameter, eight-bladed main rotor. It is powered by two Lotarev D-136, 7,360-kilowatt (9,870-shaft horsepower) turboshaft engines. The cargo hold, which is nearly the

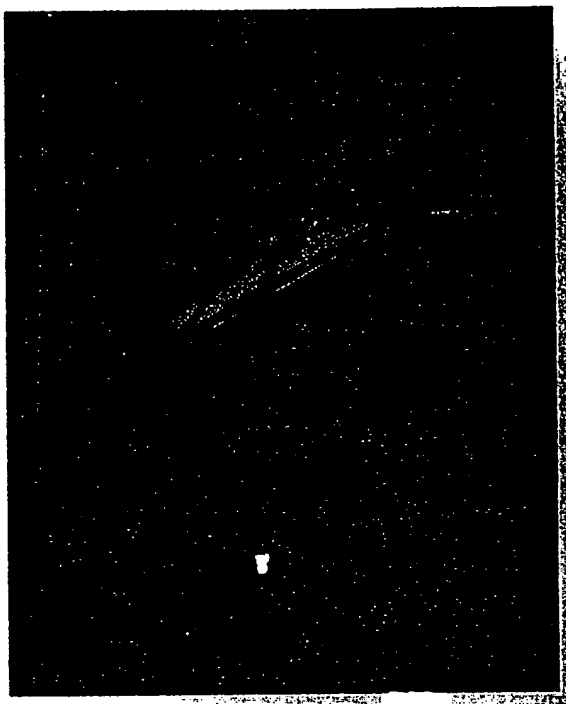


Figure 9. Vertical lift capability of the Mi-2

Figure 10. View of the Mi-26 cargo hold

same size as that of the US C-130 fixed-wing transport, is 12 meters long, 3.25 meters wide, and from 2.95 to 3.17 meters high (see figure 10). Loading is performed through a loading ramp at the rear of the fuselage. To mechanize cargo handling, the Mi-26 cargo hold is equipped with two electric winches on tracks, enabling cargoes weighing up to 5 tons to be moved throughout the length of the hold. According to a Soviet brochure on the Mi-26, it can be used for construction of bridges, transportation and mounting of heavy industrial equipment, and erection of derricks and powerlines in remote inaccessible regions (see figure 11). Further use of the Mi-26 was noted during the Chernobyl' nuclear accident in 1986, where it was used to apply chemical dispersants on top of the reactor, while operating in a highly contaminated environment.

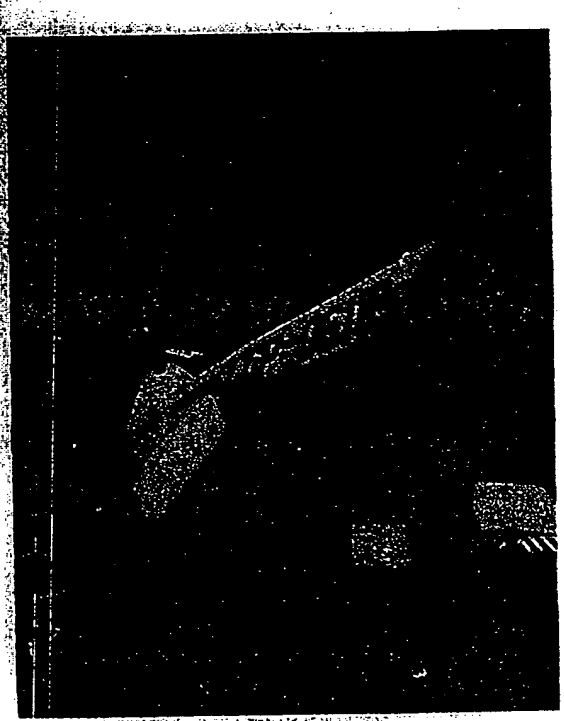
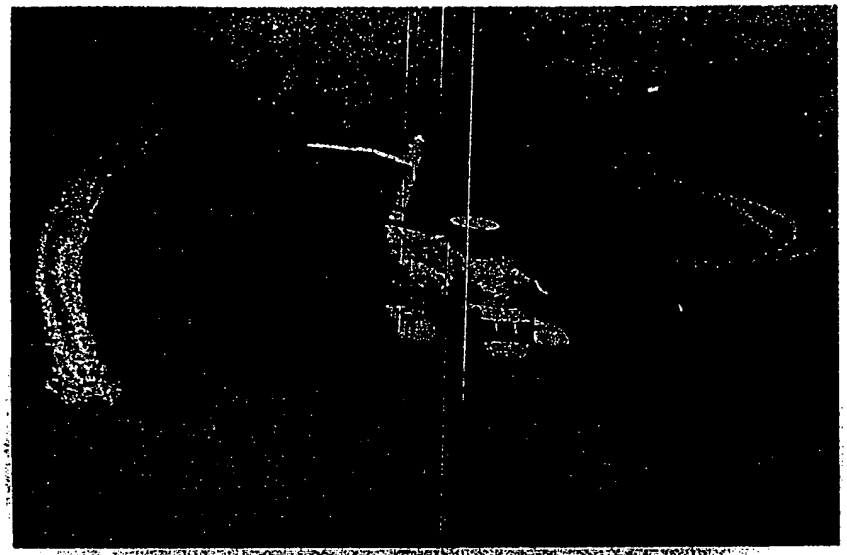


Figure 11. Industrial equipment capacity of the Mi-2

In November 1989 the Mil Design Bureau announced the development of an air crane variant of the Mi-26 to replace the aging fleet of Mi-10K Harke B's. Although the air crane version will not have increased

Figure 12. Naval variant of the US CH-53E Super Stallion heavy-lift helicopter



lift capacity over the conventional Mi-26, it probably will have better visibility—possibly using an external gondola with a crane operator—to improve precise sling-load operations. In addition to replacing the Mi-10K, the modified Mi-26 could be used to demonstrate scaled-down air crane technology that will be employed on the UHLH. We assess that an air crane version of the Mi-26 could be produced in limited numbers by 1993. Early versions of Mil-designed helicopters are discussed in the appendix.

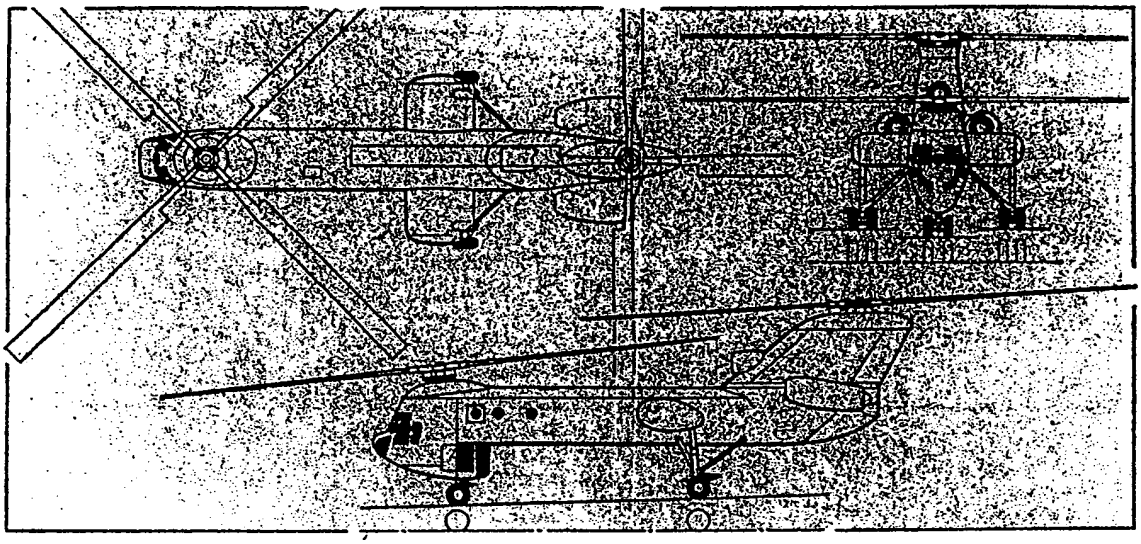
Comparison of Soviet and Western Helicopters

The Soviets have taken a commanding lead in heavy-lift helicopters. The most powerful production US helicopter, the CH-53E Super Stallion, was first produced in 1980. It can carry 16 metric tons externally, 13 metric tons internally, or up to 55 troops (see figure 12)

In the early 1970s, the United States initiated a program to develop a UHLH capable of carrying up to 30 metric tons. A prototype of this helicopter, designated XCH-62, was produced employing a tandem-rotor configuration (see figure 13). This helicopter would have surpassed the capabilities of the Soviet Mi-26. The program, however, was canceled. We believe the Soviets will use a configuration similar to the XCH-62 for their UHLH and may use some of the design specifications for the XCH-62, which are available in open-source literature

An example of the Soviet dominance in heavy-lift helicopters, and potentially in UHLHs, is illustrated in figures 14 and 15. Given a mission to transport a military aircraft over a 100-nm range, a comparison is made between the potential Soviet UHLH, the Mi-26 Halo, and the US CH-53E Super Stallion. The UHLH probably can carry a bomber-sized aircraft, such as the 43-metric-ton Tu-22 Blinder; the Mi-26 probably can carry an interceptor, such as the 20-metric-ton MiG-31 Foxhound; and the CH-53E probably can carry an air superiority fighter, such as the 12.5-metric-ton F-15 Eagle. Although these do not represent a typical mission, it does highlight the Soviet advantage in heliborne heavy-lift capabilities.

Figure 13
Views of the US XCH-62 Heavy-Lift Helicopter Showing Tandem-Rotor Configuration

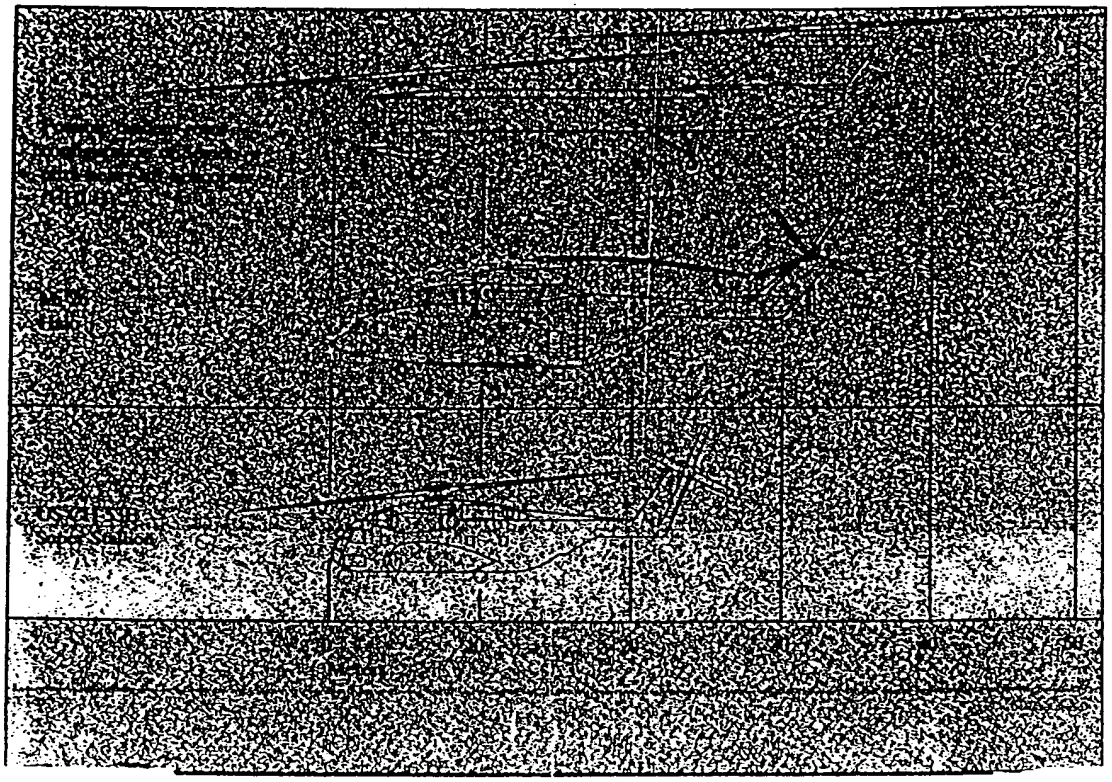


Outlook

We believe the Soviets will continue to lead the West in heavy-lift aircraft capability. However, they probably will not build a transport larger than the An-225. The An-225 has a lift capacity greater than any other transport in the world, and an aircraft much larger would exceed the weight and size limits of most of today's airfields and would be very difficult and expensive to build, maintain, and operate. The Soviets have considered the development of an airship for the transport of oilfield equipment. The proposed airship would be 300 feet in length with a lifting capability of 70 metric tons. This airship would be larger than the An-225, but with less payload capability. It would be more versatile, having hovering capability that would enable it to deliver its cargo to remote areas not readily accessible to airfields

We believe the An-225 will not replace or significantly supplement the An-124 in the heavy-airlift role. This judgment is based on the stated design mission of the An-225 and the small number of aircraft the Soviets plan to produce. The An-225, like the An-124, probably will not be used in a tactical role. The An-225's lack of a rear cargo door negates in-flight

Figure 14
Comparison of Soviet and US Heavy-Lift Helicopters



cargo extraction, and, according to the designers, an insufficient cargo hold pressurization prevents troop transport. The An-225 could be used to transport outsized military equipment, but the small number to be produced would limit its utility for transporting significant numbers of time-critical military payloads.

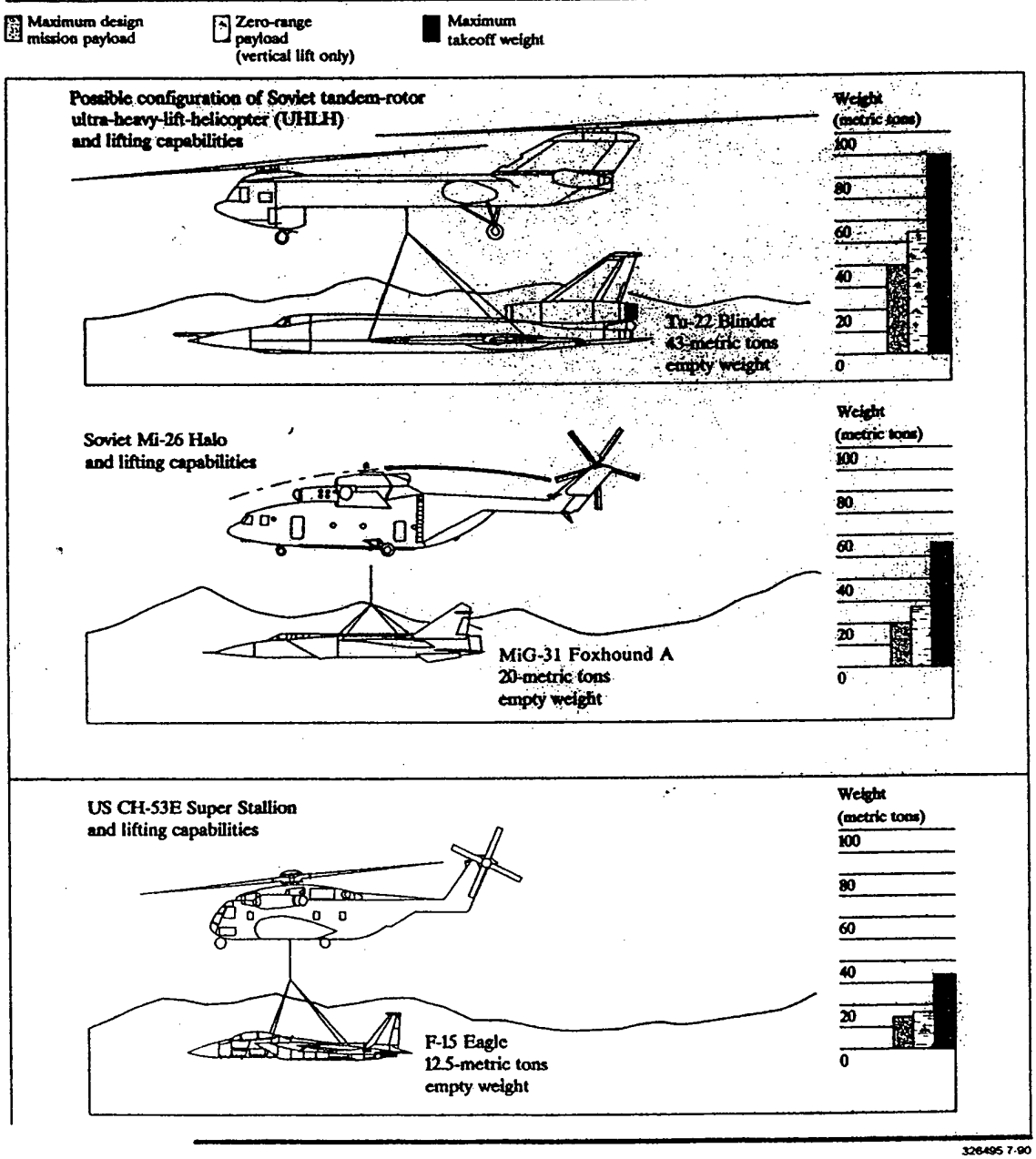
We believe the Soviets will continue development of heavy-lift helicopters. They have excellent technical knowledge and vast experience in developing first-rate helicopters, as well as a strong need for aircraft with an ultra-heavy-lift capability

The Soviets probably will produce only a small number of UHLF

, if only a few—about 10 to 20—UHLH are built, existing helicopter components would be used but that, if a large number are built, then components of a completely new design would be required.

because a small number

Figure 15
Mission Payload Comparison of Soviet and US Heavy-Lift Helicopters Over a 100-nm Range



of UHLH would fulfill Soviet needs—we believe the Soviets will produce only 10 to 20 UHLH

[redacted] We expect the Soviets to commercially export them or to lease them as they have with the Mi-26 in order to get hard currency

Appendix

Early Heavy-Lift Helicopters Developed by the Mil Design Bureau

The Soviets' long history of developing heavy-lift helicopters has been centered at the Mil Design Bureau, which has developed some excellent helicopters. Three of the early Mil designs, predecessors to the Mi-26 Halo, include the Mi-6 Hook, Mi-12 Homer, and the Mi-10 Harke. Figure 16 shows views of these helicopters

Mi-6 Hook

Development of the Mi-6 Hook began in 1954. This helicopter, which was operational by 1960, was the Soviets' primary heavy-lift helicopter before the Mi-26. The Mi-6 is powered by twin turboshaft engines yielding 4,045 kilowatts (5,425 shaft horsepower) each at takeoff rating. It has a maximum internal payload of 12 metric tons or a maximum sling load of 8 metric tons. The Hook has a maximum speed of 160 knots. A high cantilever wing with a span of 15.3 meters offloads the main rotor by 22 percent during cruise and substantially increases the range performance

Mi-12 Homer

The Mi-12 Homer—although never put into production—is the world's largest rotorcraft. The Homer, designed in 1964, employs a laterally displaced rotor system mounted on the end of its wings (similar to a tilt rotor in the helicopter mode). The Homer has a fixed-wing type of fuselage and has the capacity to carry 40 metric tons internally only. Three Homers were built, but, because of drive train component design problems and aeroelastic problems, the program was short lived

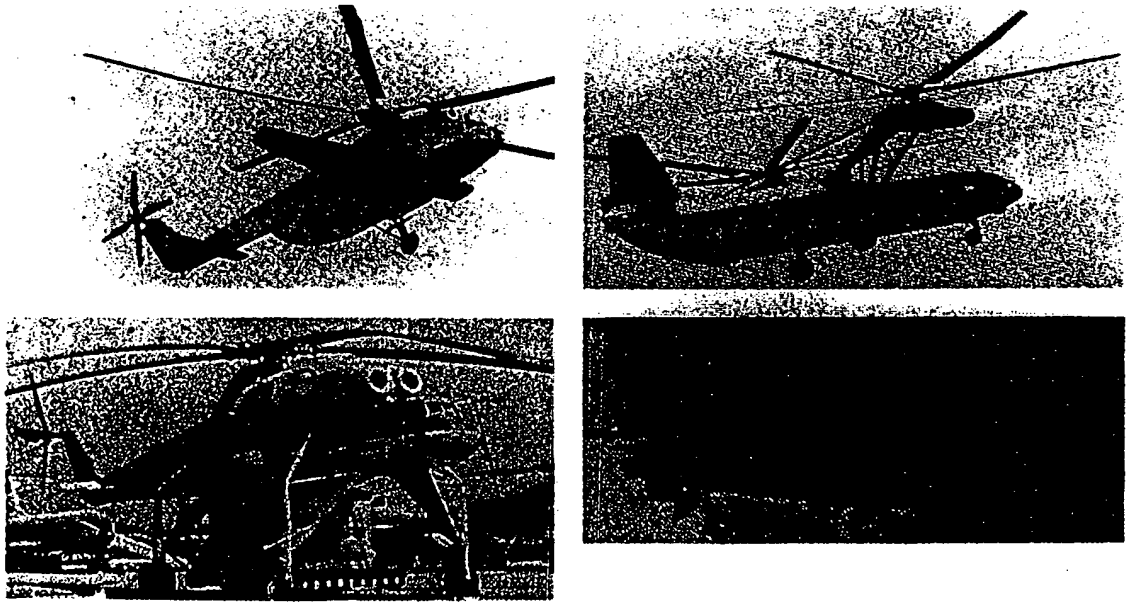


Figure 16. Early Mil Design Bureau heavy-lift helicopters: (upper left) Mi-6 Hook, (upper right) Mi-12 Homer, (lower left) Mi-10 Harke A, (lower right) Mi-10 Harke B

Mi-10 Harke

The Mi-10 Harke A is a Hook airframe that has been substantially modified, with a special quadricycle landing gear added to facilitate the movement of bulky equipment. Development began in 1958, and the Harke A was operational in 1966. The unique landing gear provides a 3.8-meter ground clearance, giving the Harke A the capability to taxi over most loads without going airborne. If the platform between the landing gear is used, the Harke A has a 12-metric-ton payload capacity.

The Mi-10K Harke B is a short-legged version of the basic Harke intended for sling-load operations. This version is equipped with a rear-facing crane operator's gondola. The Harke B incorporates uprated Harke A, D-25VF, turboshaft engines—4,850 kilowatt (6,500 shaft horsepower) each—allowing for a maximum sling-load capability of 14 metric tons and a maximum gross vertical takeoff weight of 43 metric tons.